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ABSTRACT

The study examined competitiveness among eight very high achievers in four talent fields: research mathematics, concert piano, swimming, and tennis. Retrospective interviews had previously been conducted with the subjects as part of B. Bloom's "Development of Talent Project." A 14-statement instrument was developed and applied to interview protocols. Five statements concerned competitiveness of the parents, two statements dealt with the importance of winning or being best to coaches or teachers, and five statements addressed the competitiveness of the individual. Results indicated that there is variation across the talent fields in the level of competitiveness and that the talented individuals in the two athletic fields, as well as their parents and teachers, were more highly competitive than individuals in the non-athletic fields. Mathematicians appeared to be the least competitive in the four talent fields. Findings suggest that the different levels of competitiveness may be related to the different methods used for judging success or achievement. In all families, doing well was an important value. (DB)

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The Competitiveness of Highly Accomplished Individuals in Four Talent Fields

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The Competitiveness of Highly Accomplished Individuals in Four Talent Fields

Competitiveness has been studied by social scientists for several decades. In fact, one of the earliest experiments in social psychology demonstrated the facilitative effect of competition vs. working alone on performance (Triplett, 1897). Allport (1924) suggested that in competitive performance two social factors are at work: (1) social facilitation, which is an increase of response merely from the sight or sound of others making the same movement and, (2) rivalry, an emotional reinforcement of an activity accompanied by the consciousness of the desire to win. Different performance situations may evoke competitive behavior and the factors of social facilitation and rivalry may influence competitive behavior in different situations. For example, in an athletic competition where success is determined by the number of others one "beats", rivalry is likely to influence the level of performance. In other activities where judgments are not based on beating others, competition many also influence performance but it may have the effect of a social facilitation rather than rivalry. In this research, the competitiveness of an individual refers to the desire to win or be the best and thus the social factor of rivalry is presumed to be related to performance in certain fields.

The data used in this study was originally collected as part of the Development of Talent Project (Bloom, 1985). In this study, the data are used to investigate a somewhat different and more specific question than those posed by the original researchers. This question is related to the importance of and development of competitiveness in different talent fields. A major theme that emerged repeatedly in the study of the tennis players, one of the two athletic fields studied, was the importance of winning to these tennis players (Monsaas, 1985). Comments such as "I hate to lose " and "Winning was all important to me" arose frequently in the tennis player interviews. This appeared to be in contrast to the other talent fields where winning and beating others did not seem as important. Rather the value of hard work and doing well were important in the other talent fields. This observation led to the question addressed in this study. Were the tennis players more competitive than the talented individuals in the other talent fields?

Background: The Development of Talent Project

In 1979, a group of researchers on the Development of Talent Project at the University of Chicago began studying the development of three types of talent: artistic, athletic and cognitive talent. The project was directed by Benjamin S. Bloom and was an investigation into the environmental variables associated with extremely high levels of talent.

The project was based on the assumption that there must be an enormous pool of talent available in a society although only a small portion of it is developed. Getzels and Dillon (1973) make a distinction between talent and giftedness. The label gifted tends to be applied to children who have high levels of performance on intelligence tests, while talent refers to all "superior abilities valued by society" (p.693). Talent was defined, for the purpose of this research, as reflecting "an unusually high level of demonstrated ability, achievement, or skill in some special field of study or interest" (Bloom, 1985, p.5).

Because the purpose of the study was to study individuals who had reached the highest levels of accomplishment, many of the classic studies of gifted and talented individuals were inappropriate as models for this research. Much of the previous research focused on identifying young people with high levels of ability or potential (Terman, 1925-1959; Hollingworth, 1942; Getzels & Jackson, 1962) but who had not necessarily demonstrated high levels of accomplishment. For this reason retrospective interviews with individuals who have reached the highest levels of achievement in their respective fields were used in this research. Approximately 25 of the most accomplished individuals were selected in each of the following six talent fields: research mathematics and research neurology (cognitive), concert piano and sculpture (artistic), swimming and tennis (athletics).

The findings provide support for the idea that parents play a critical role in the development of talent (Bloom, 1985; Sloane, 1985). The parents of the highly talented individuals valued the work ethic and doing one's best. The families were very "child centered" and spent a great deal of time with their children. Their children were clearly the priority in their lives (Bloom, 1985; Sloane, 1985). Parents had a general preference for activities related to the general talent domain in which their child excelled, for example, tennis players' parents spent time on athletic activities (Monsaas, 1985), pianists' parents valued "good" music and aesthetic endeavors (Sosniak, 1985). The values of the work ethic, being child-oriented and the preference for the talent domain set the stage for the parents to invest a great deal of time and effort to develop talent (Bloom, 1985).

The talented individuals invested a great deal of time in the activity over many years (Bloom, 1985). In no case did the individual spend less than 10 years of intense learning in the activity to reach the highest levels of achievement. The motivation to invest the time at the youngest ages was a "sense of specialness" (Sosniak, 1985) and reward for doing well from parents and others, especially teachers and coaches. Eventually the talented individual became responsible for their own motivation (Bloom, 1985) but through the process of talent development the public notice and praise played an

inportant role, especially in the "performance" fields such as piano, swimming and tennis.

A major source of motivation for the tennis players was their desire to win (Monsaas, 1985) which led to the hypothesis of this study. Competitiveness was defined as the desire to win or be better than others in any given activity. Since competition played a key role in the development of tennis talent, the extent to which competition was also important in the other talent fields, specifically Olympic swimming, piano and mathematics, needed to be examined.

It was hypothesized that the tennis players would have the highest levels of competitiveness because of the way in which judgments are made about their success, that is, they are judged by the number and quality of other players that they beat. Because Olympic swimming is an athletic field where competition is also important, it was anticipated that they would have a relatively high level of competitiveness as well. Pianists and mathematicians were expected to be lower in competitiveness because they are judged by presumably more objective standards and they are not so clearly engaged in competition with their peers.

METHOD

Subjects

In selecting the most outstanding individuals in the four talent fields used in this research (as well as the two talent

fields not included here) researchers on the Development of Talent Project contacted a number of experts, scholars and teachers in the field to find the criteria that could be used for identifying individuals who have reached world class levels in the talent fields. Two restrictions were included in all of the talent fields. Only talented individuals who were raised in the U.S. were included in the study to reduce any potential cultural influence on talent development. Because supplimentary interviews with parents were included in the research design, only individuals under the ages of 35-40 were included in the sample. Approximately 25 individuals were selected in each of the talent fields.

Briefly, the tennis players in the sample were U.S. born individuals, both male and female, who had been ranked in the top ten in the world by one of the four major organizations that do world-class rankings of tennis players. The swimmers were selected because they had earned a place on an Olympic swimming team in a sprint event. The pianists had been finalists in one or more of six major international piano competitions. The research mathematicians were the winners of Sloan prizes in mathematics and were judged to be the most significant contributors to mathematics by mathematics faculty members of six of the major universities. They were also most frequently cited in the Science Citation Index. While these criteria may have missed a few of the most outstanding individuals in some fields, experts in each respective field

agreed that those that were included were among the top individuals in their fields.

A random sample of eight individuals in each of the four talent fields studied for this research was selected. Replacements were selected in the event that information on competitiveness was not available for some of the individuals. Replacements were used for both the concert pianists and research mathematicians because some of the protocols did not include information on competitiveness. While this probably suggests that the individuals in these two talents fields were less competitive, more information is needed to make this determination. There was sufficient information on the competitiveness of the individuals in the two athletic fields and replacements were not used in these fields.

Instrument

A survey was developed to measure competitiveness. In developing this instrument, a list of behaviors and values related to competitiveness was made. The instrument was tested on a a random sample of tennis players and modified based on this trial. The survey was then tested on a sample from the three other talent fields to make the statements less specifically related to competitiveness in tennis. The protocols used were verbatim transcripts of the interviews with the talented individuals and their parents which were rearranged into catagories reflecting the major questions

addressed in the Development of Talent Project (e.g., home environment, instruction, time).

The survey consists of 14 statements rated on a three-point scale of importance (2 = Very Important, 1 = Important, 0 = Not Important). Twelve of the statements dealt with competitiveness. Five of the statements concerned the competitiveness of the parents such as the extent to which they modeled competitive behavior and reinforced winning or being best. Two of the statements dealt with the importance of winning or being best to the teachers or coaches. Five statements addressed the competitiveness of the individual, the importance of winning or being best to the individual and how the individual reacted when he or she lost or was not best.

Two additional statements that dealt with the value of achievement were added as "controls". These two questions reflect the value of doing well and doing ones best as contrasted with being better than others.

Interrater reliability was assessed on a sample of seven protocols across all four talent fields. The ratings of two independent raters were correlated and an average correlation of +.80 was obtained. The correlations ranged from +.64 to +1.00 on each protocol.

RESULTS

The results from the analysis of competitiveness show that there is variation across the talent fields in the level of competitiveness and that the talented individuals in the two athletic fields, as well as their parents and teachers, were more highly competitive than individuals in the non-athletic fields.

Table 1 and Figure 1 summarize the overall findings on competitiveness. The parents of the tennis players and swimmers were significantly more competitive than the parents of the mathematicians or the pianists, X^2 (3, $\underline{N}$ = 32) = 13.597, $\underline{p}<.01$. An interesting finding is that the Olympic swimmers' parents were almost as competitive as the tennis players' parents.

Insert Table 1 and Figure 1 Here

The findings on the importance of competitiveness to the teachers or coaches was also in the expected direction, X^2(2, $\underline{N}$ = 24) = 19.833, $\underline{p}<.01$. Winning and being best was very important to the tennis and swimming coaches. It tended to not be very important to the pianists' teachers where it appeared that it was the "musicianship" that was important to them and not comparisons with other pianists (Sosniak, 1985).

No information was found on the importance of competitiveness to the teachers of the mathematicians. There

are two possible explanations for this finding (in addition to the unlikely possibility that information on the competitiveness of the teachers was missed in all of the mathematician interviews). One explanation is that the teachers did not encourage competition. Another explanation is that some of them encourage competition but winning and competitiveness plays a very minor role in the development of the mathematician. Also, the mathematicians were different from individuals in the other talent fields in that they did not have one teacher with whom they stayed over several years. Therefore, many of the early teachers probably did not have the strong impact in their development that they did in other talent fields. The findings from the mathematicians suggest that most of the elementary, secondary and even college teachers had a relatively unimportant role in the development of high levels of mathematical talent. The graduate school teachers of the mathematicians typically played the most important role (Gustin, 1985).

The talented individuals themselves varied in the importance of competitiveness across talent fields, $X^2(3, N = 32) = 12.505$, $p<.01$. Both the Olympic swimmers and tennis players were very competitive. There is evidence that some of the pianists were competitive although their parents and teachers generally were not. An explanation for some of the pianists' competitiveness may lie in the fact that they did enter competitions although not as frequently as the athletes.

Also some of them found when they went to Juilliard or Curtis that the environment was somewhat competitive.

The mathematicians appeared to be the least competitive of these four talent fields. It seems that being better than ones' peers is not as important for mathematicians as it appears to be in the other talent fields.

Families in all four talent fields valued achievement. Table 1 shows that the percent of families that valued achievement was high in all four fields. It is interesting to note that the percentages for swimmers' and tennis players' families were slightly lower than for the pianists and mathematicians. The evidence from the protocols of a few of the athletes was that winning was the only thing that mattered. Doing one's best, but not being the best was not good enough. The difference across the four groups was not significant. $X^2(3, \underline{N} = 32) = 2.561$, $\underline{p}<.50$.

SUMMARY AND CONCLUSIONS

The results show that there is variation in competitiveness across the talent fields and that the talented individuals, their parents and teachers are more competitive than individuals in the two non-athletic fields. The results show individuals in both athletic fields to be higher in competitiveness suggesting that a high level of competitiveness may be necessary for the highest levels of achievement in athletic fields, at least individual athletic

fields. There is evidence that some of the pianists were competitive, although their parents and teachers did not generally value competitiveness. There was less evidence concerning the competitivness of the mathematicians but they appeared to be least competitive of the four talent fields. It seems that being better than ones' peers is not as important in mathematics as it is for other talent fields.

An interpretation of these findings is that the higher level of competitiveness of the athletes is related to the methods used for judging success or achievement, which involve being better than or winning against others. Success in piano and in mathematics do not require frequent comparisons with ones' peers. One is presumably judged by standards that are independent of the performance of others. Accordingly, in these two non-athletic fields there seems to be more variation in the importance of competitiveness to the individuals, i.e., a few of the talented individuals were highly competitive, others were not. Because these individuals were the best in their fields, they were better than most of their peers, but comparison with ones peers are not as frequent or are they as public as they are in athletic fields. Thus one can be relatively oblivious to the performance of others and to comparisons with others while still being the best.

It is interesting to note that the parents played an important role in talent development (Bloom, 1985) and it is possible that that they played an important role in the

development of competitiveness. The parents and coaches of the athletes modelled competitive behavior and reinforced winning and being best. It is not surprising the talented athletes were competitive also. While the analyses presented here do not show that competitive parents have competitive children, the importance of competitiveness to parents and individuals in the athletic fields studied here suggests that this may be the case. Further research is needed to investigate this possible relationship.

Doing well was expected in almost all of the families in all four of the talent fields studied here. The difference across across talent fields appears to be the way in which achievement and doing well was manifested. To reach the highest levels of achievement in athletic fields it is necessary to win. One must be better than one's athletic peers to be highly successful. In the two non-athletic fields, where beating one's rivals is not necessary to reach the highest levels of accomplishment, there is more variation in terms of competitiveness. One possible conclusion is that in almost all cases of extreme talent development, the value of doing well is necessary; in some talent fields doing better than others is also critical for success.

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Table 1

The Importance of Competitiveness and the Value of Achievement across Talent Fields

	Mathematicians (n = 8)		Piano (n = 8)		Swimmers (n = 8)		Tennis Players (n = 8)	
	n	%	n	%	n	%	n	%
Parents	0	0%	1	12.5%	5	62.5%	6	75%
Teachers/ Coaches	*		1	12.5%	8	100%	8	100%
Individual	2	25%	4	50%	8	100%	7	87.5%
Value of Ach.	8	100%	7	87.5%	6	75%	6	75%

*Information not available

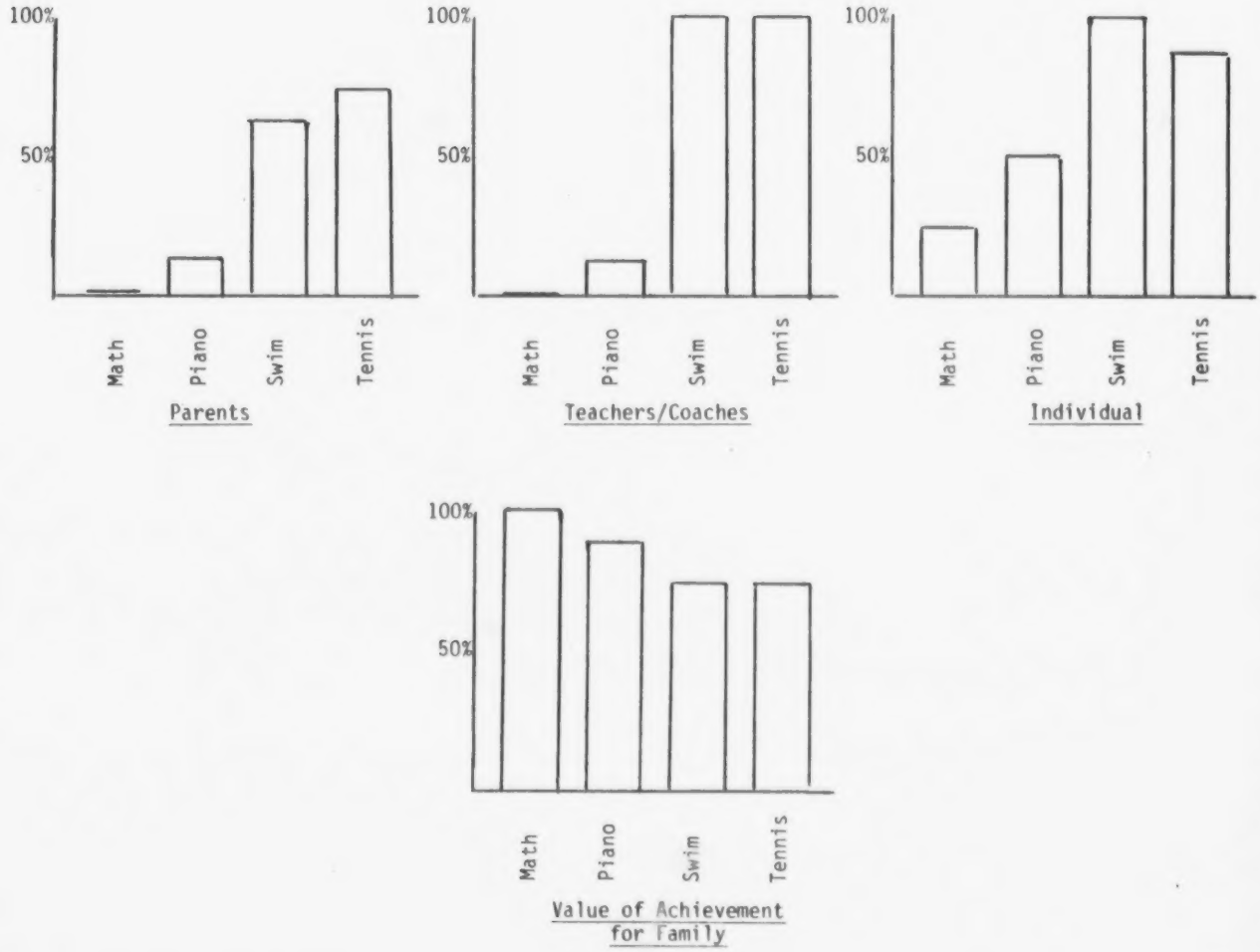

Figure 1. The importance of competitiveness for parents, teachers and talented individuals and the value of achievement across talent fields.